METROPOLITAN
TRANSPORTATION
COMMISSION

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Memorandum

TO: Air Quality Conformity Task Force DATE: September 22, 2004

FR: Harold Brazil W.I.:

RE: MTC/CARB Regional VMT Reconciliation

MTC and CARB have consistently come up with different estimates of average weekday vehicle miles of travel (VMT) in the Bay Area, with CARB's estimate being higher than the estimate produced by MTC's travel demand forecast model (BAYCAST). For conformity purposes, MTC has agreed to use CARB's base (current) year VMT estimate and then grow this VMT number in the future in proportion to the growth in VMT forecasted by MTC's travel model between the base year and some future year (e.g., 2020). While this approach is more protective of public health, it does not address the root of the problem, which is a better understanding of what is producing such different VMT estimates. Any estimate of VMT is simply that, an estimate, because it is not realistically possible to know the "actual" VMT on all roads in the Bay Area.

MTC has suggested that a better VMT estimating protocol be developed that looks at the sources of information currently available as well as possible methodological reasons for the differences in VMT—are the differences because arterial/collector street VMT is underestimated in MTC's travel model, because certain types of trips are excluded from MTC's travel model, or because certain types of vehicle use is under represented (e.g. service delivery trucks)—to name a few possible reasons. Vehicle activity forecasted by MTC's travel model is based on information collected from scientifically stratified travel survey of Bay Area residents, and model estimated traffic volumes are thoroughly checked against Caltrans' reported highway traffic volumes (but less so in comparison to local street traffic volumes). One of CARB's primary sources of VMT is the Bureau of Automotive Repairs odometer readings taken when vehicles undergo smog checks, but this data source also has flaws (e.g., this VMT estimate will include the VMT accrued by Bay Area vehicles outside the region, and will exclude the VMT accrued by non-Bay Area vehicles (visitor travel) conducted inside the region.). Another source of CARB's VMT is Department of Motor Vehicles (DMV) registration data which is part of deriving vehicle type population information. An additional source of VMT data at the state level is the Highway Performance Monitoring System (HPMS), which is designed to collect data on a sample of Bay Area roads and then allow for expansion of this data for regional and state VMT estimates. Some of the reported HPMS data may be estimated, rather than represent actually collected data.

Because of these discrepancies, MTC must keep two sets of VMT books, the one for conformity, and the other VMT estimates used for all other regional transportation planning work in the Bay Area. Clearly, it would be better to have the VMT used for conformity determinations come directly from MTC's travel model, but it may take time to resolve some of the core issues. Another source of concern for MTC in calculating on-road mobile source emissions in air quality plans, is number of daily engine starts CARB attributes to a single vehicles. These estimates are based on a sample of 50 GPS-instrumented "loaner" vehicles, conducted in the Sacramento region several years ago. If this number is too high, the EMFAC model may be overestimating non-VMT emissions associated with engine cold start and hot soak emissions. .

In broad strokes, MTC suggests a set of tasks for different agencies to help answer some of the outstanding questions and hopefully point to some process that both MTC and CARB deem superior to the current default process in place (see attached).

Components of Regional Vehicle Miles of Travel (VMT) Reconciliation Protocol MTC/CARB/Caltrans/FHWA

Component	Issues	Tasks	Responsible Agency(s)
HPMS (Highway Performance Monitoring System)	1. Segments in HPMS were randomly selected, but updating of traffic volumes is subject to panel conditioning errors. 2. Year of collection variable is excluded in recent versions of HPMS, thereby limiting any quality and data source review.	1. Perform statistical analysis of HPMS data, including the vintage of traffic counts, share of VMT based on traffic counts versus other methods. 2. Report standard errors by county and facility type. 3. Propose and fund data collection plan to fill in the gaps, and to check reliability of reported volumes. 4. MTC Staff will be attending FHWA HPMS Workshop in San Antonio, Texas.	MTC, FHWA, Caltrans
BAR (Bureau of Automotive Repair) Inspection / Maintenance Data	1. VMT Data is based on county-of-registration, not county-of-occurrence. This may over-estimate Bay Area VMT. 2. Can use biennial inspection/maintenance data to track changes in statewide and regional VMT.	1. Describe sample universe for BAR data. What vehicles are excluded (e.g., non-operable vehicles). 2. Describe how expansion factors are developed and applied (age, make/model). 3. Describe distribution of zero-travel vehicles by age of vehicle; VMT frequency distribution by age and weight of vehicle; maximum and median VMT per sample vehicle by age of vehicle.	CARB, BAR
BATS - MTC Household Travel Surveys (Bay Area Travel Survey – BATS)	1. VMT data for household vehicles. 2. Data will include point-to-point-based vehicle miles derived from MTC's GIS systems. This can be compared against zone-to-zone average mile estimates.	1. Compute average weekday daily VMT per household vehicle 2. Compute average Saturday and Sunday daily VMT per household vehicle 3. Report frequency distribution characteristics by age of household vehicle.	MTC
MTC Very Small Truck Trip Models (VST)	1. Previous MTC models excluded very small (4-tire) commercial vehicle travel, and over-expanded non-home-based trips to account for these trips in model validation. 2. Very short commercial trips (< 5 miles) could be underestimated in existing demand models. 2. Standard MTC truck models include large trucks, and are validated against Caltrans truck counts.	1. Apply Phoenix, Arizona's Very Small Truck Trip Models in MTC's Year 2000 Model Validation efforts. (Phoenix models are described in FHWA's Quick Response Freight Manual).	MTC